

Summary of Cancer Incidence and Mortality for Zip Code 29153 (Sumter, SC)

Cancer Incidence in Zip Code 29153

The first step in the analysis of cancer data for zip code 29153 was to look at the number of new cancer cases diagnosed in the zip code and compare this to the number of cancer cases expected (see Table 1). This first step determines if there is anything unusual with cancer patterns in the area. The number of "expected" cancer cases is calculated by using South Carolina cancer rates and applying them to the population of the zip code.

Table 1 shows what types of cancer occurred in zip code 29153 from 1996-2000, and how many cancer cases were expected. Overall, there were fewer cases of cancer than expected. A total of 273 new cases of cancer occurred in the zip code, while 325 cases were expected. The analysis did reveal one specific type of cancer (**stomach**) where the number of cases was significantly higher than expected. A total of 10 stomach cancer cases occurred while 5 were expected. All 10 cases occurred in those 50 years of age or older, and 70% were diagnosed in men.

Stomach cancer is twice as common in men as it is in women, and there is a sharp increase in stomach cancer after the age of 50. Smoking, alcohol use, and diets that contain large amounts of smoked foods, salted fish and meat, pickled vegetables, or certain foods high in starch/low in fiber can increase a person's risk of developing stomach cancer. Many studies are also showing that *Helicobacter pylori* infection is a major cause of stomach cancer.

Cancer Deaths in Zip Code 29153

To assess cancer deaths in this zip code, cancer mortality data from 1997-2001 were used. The same process used to analyze new cancer cases was also used to analyze cancer deaths. Table 2 shows the number of cancer deaths that occurred and the number expected in the zip code. A total of 133 cancer deaths occurred in this zip code, while 150 deaths were expected. Therefore, there were fewer cancer deaths than expected.

The analysis revealed two specific types of cancer (**female breast and leukemia**) where the number of cancer deaths was significantly higher than expected. Research has shown that there are several factors that put a woman at increased risk for breast cancer. These risk factors include increasing age, a family history of breast cancer, prior history of breast cancer or benign breast disease, early age at onset of menstruation, late age at menopause, and late age at first pregnancy or not having children. Also, about 1 in 10 breast cancers are linked to changes in certain genes. Inheriting a mutated gene from either parent means a woman is more likely to develop breast cancer.

The use of alcohol and being overweight are clearly linked to a higher risk of breast cancer. However, other areas are not as clear as to their effects on breast cancer risk. For example, a recent study found that the use of birth control pills slightly increased the risk of breast cancer. However, women who stopped using the pill more than ten years ago do not seem to have an increased risk. Also, most studies suggest that long-term use (5 or more years) of Hormone Replacement Therapy (HRT) may slightly increase the risk of breast cancer.

There are several factors that we know do not increase breast cancer risk. Studies have shown that induced abortions and miscarriages do not increase the risk of breast cancer. Also, current research does not clearly show a link between breast cancer and exposure to pollutants such as pesticides.

There are four main types of leukemia, and each has a totally different set of risk factors associated with it. Chronic lymphocytic (CLL) and chronic myelocytic leukemias (CML) occur most often in adults. The only known inherited risk factor for chronic leukemia is having first degree relatives who have had CLL. Long term contact with herbicides and pesticides among farmers can increase their risk of CLL.

Acute lymphocytic leukemia (ALL) occurs most often in children. Acute myelocytic leukemia (AML) occurs mostly in adults. Smoking is a proven risk factor for AML. About 1/5 of AML cases are caused by smoking. Also, scientists have discovered that people exposed to benzene or to large amounts of radiation (such as in people receiving treatment for other cancers) have an increased risk of ALL and AML.

Conclusions

To summarize, fewer cancer cases and cancer deaths occurred in zip code 29153 than expected. Stomach cancer cases, female breast cancer deaths, and leukemia deaths were significantly elevated in this zipcode; however, upon further examination, we do not see evidence of a cancer cluster. The following explains the reasoning behind this conclusion.

In order for a true cancer cluster to exist, the number of cancers occurring must be more than would be expected by chance. Along with statistical testing, there are several other criteria that determine whether a true cancer cluster exists. First, a cancer cluster would more likely involve rarer types of cancer rather than more common cancers like lung or breast cancers. Also, a cancer cluster would occur with one specific type of cancer rather than having excesses in several different types of cancer.

In addition, the risk factors associated with the elevated cancers are primarily lifestyle-related (i.e. smoking, alcohol use) or hormonally-related (i.e. early menstruation, late menopause). Finally, none of the elevated cancers are clustered in time. There is a steady occurrence of cases or deaths per year over the time period.

Taking all these criteria into consideration, there is no evidence of cancer clustering or of an excess of cancers resulting from environmental exposures in zip code 29153.

For questions about this report, please contact Laura Sanders at the SC Central Cancer Registry.

Report provided by:

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Information on cancer incidence provided by the SC Central Cancer Registry, Office of Public Health Statistics and Information Services, SC Dept. of Health and Environmental Control.

Information on cancer mortality provided by the Division of Vital Records and the Division of Biostatistics, SC Dept. of Health and Environmental Control.

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Table 1. Analysis of New Cancer Cases in Zip Code 29153, 1996-2000

<u>Site</u>	<u>Observed No. of Cases</u>	<u>Expected No. of Cases</u>	<u>Observed/Expected</u>	<u>Chi-Square Test*</u>
Prostate	55	54.4	1.01	0.01
Lung/Bronchus	46	51.7	0.89	0.64
Breast (Female)	30	47.9	0.63	6.68
Colon/Rectum	28	36.9	0.76	2.16
Bladder	10	12.7	0.79	0.57
Non-Hodgkins Lymphoma	10	10.6	0.95	0.03
Stomach	10	5.1	1.98	4.85
Pancreas	8	7.2	1.12	0.10
Leukemia	7	6.3	1.12	0.09
Kidney/Renal Pelvis	6	8.3	0.73	0.62
Ovary	5	5.3	0.94	0.02
Uterus	5	7.9	0.63	1.08
Brain/CNS	4	4.5	0.89	0.05
Melanoma	4	11.1	0.36	4.56
Oral/Pharynx	4	9.4	0.43	3.06
Esophagus	3	4.5	0.67	0.50
Unknown/III-Defined	10	NA	NA	NA
All Sites	273	324.7	0.84	8.24

Excludes in situ cases of cancer to allow for comparison.

Cancer sites with less than 5 cases of cancer expected are not analyzed due to the unreliability of statistical tests based on small numbers.

*The Chi-square statistical test allows us to determine if the difference between what is observed and what is expected is significant. If the value is greater than 3.84, then we are 95% confident that the observed number of cases is significantly different from the expected number of cases.

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Table 2. Analysis of Cancer Deaths in Zip Code 29153, 1997-2001

<u>Site</u>	<u>Observed No. of Deaths</u>	<u>Expected No. of Deaths</u>	<u>Observed/Expected</u>	<u>Chi-Square Test*</u>
Lung/Bronchus	28	44.7	0.63	6.24
Breast (Female)	18	10.9	1.65	4.58
Colon/Rectum	13	14.6	0.89	0.17
Leukemia	11	5.2	2.12	6.53
Prostate	9	10.2	0.89	0.13
Pancreas	8	8.2	0.98	0.00
Non-Hodgkins Lymphoma	5	5.3	0.94	0.02
Unknown/III-Defined	9	NA	NA	NA
All Sites	133	149.6	0.89	1.84

Cancer sites with less than 5 cancer deaths expected are not analyzed due to the unreliability of statistical tests based on small numbers.

*The Chi-square statistical test allows us to determine if the difference between what is observed and what is expected is significant. If the value is greater than 3.84, then we are 95% confident that the observed number of deaths is significantly different from the expected number of deaths.

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